

Fig. 1

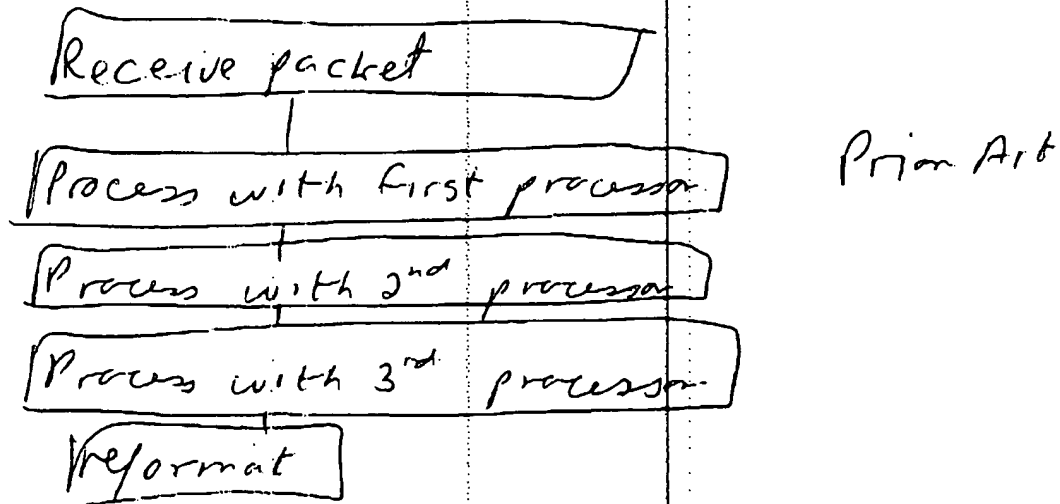


Fig. 2

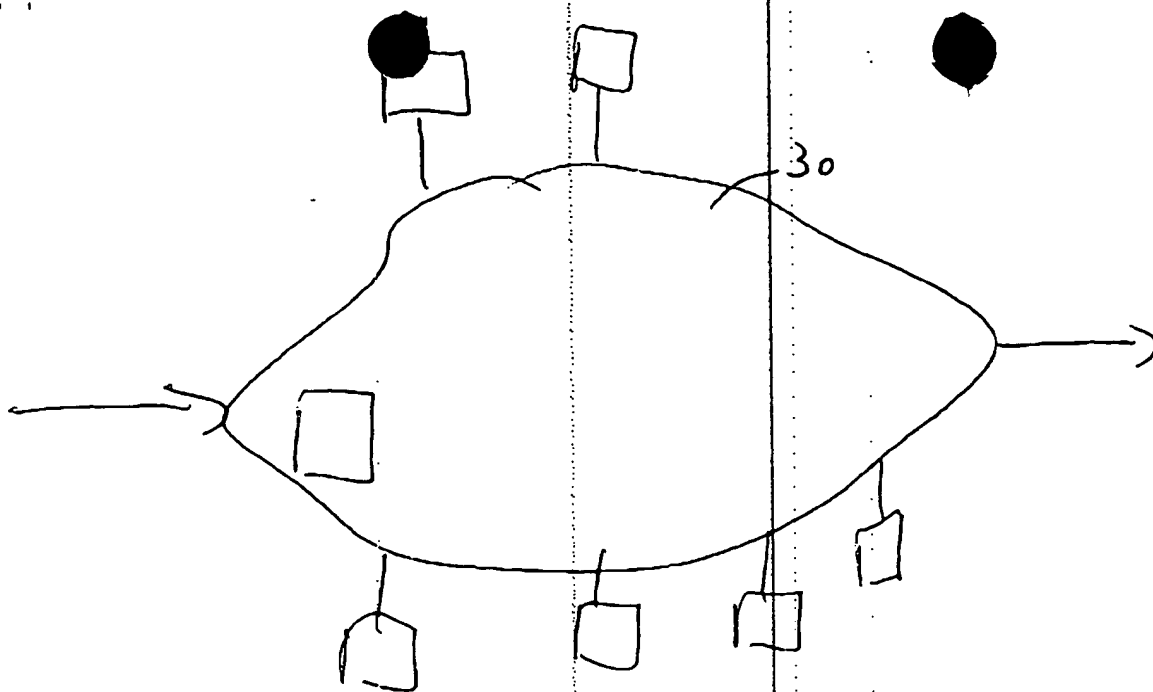


Fig. 3

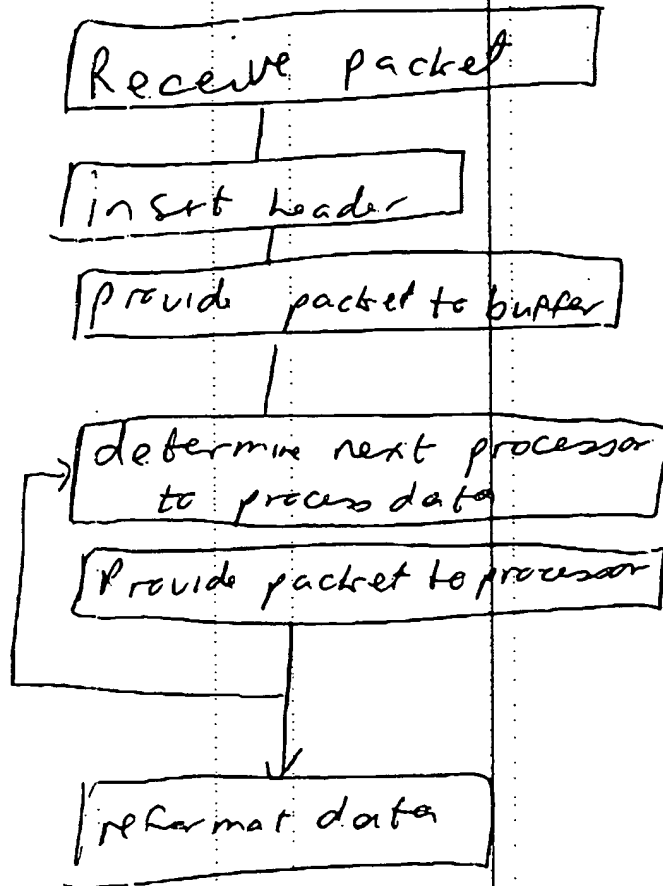


Fig. 4

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Server Elements
 - create and/or modify control entries in Super Packet based on data

**Data Elements**

- provide Super Packets to or accept Super Packets from Super Packet Buffer
- provide data that with outside world
- provide simple, initial filter and routing of Super Packets

Client Elements
 - perform simple processing functions on data as specified in Super Packet control entries in the Super Packet

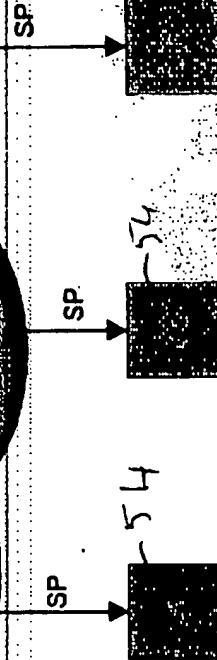


Fig. 5

Generic Processing Element

- can interact with a super packet and super packet buffer
- can modify control and data elements of super packet



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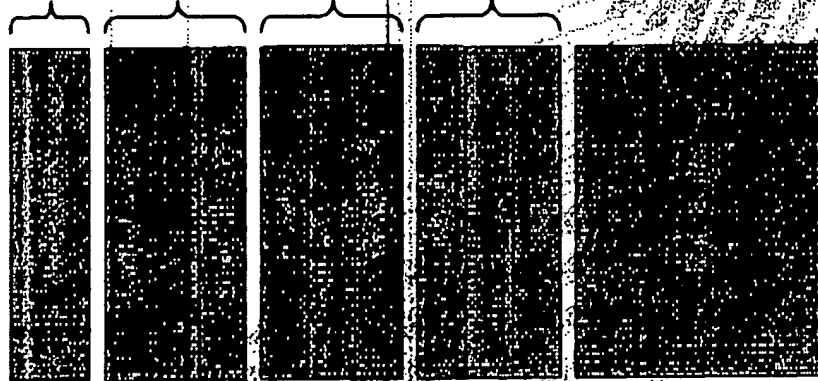
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Super Packet

- Contains all control, coding, keying information required to process the contained data



Header identifies Super Packet and provides timing and tracking information.

Control Entries identify operation to be performed on attached data and how to treat result data, result codes and completion information are placed back into the control entries.

uCode is the instructions required by the generic control elements to perform the commands coded in the control entries on the associated data.

Keying information must be provided for each control action that invokes a cryptographic operation.

Data buffer controls original and modified data.

Fig 6



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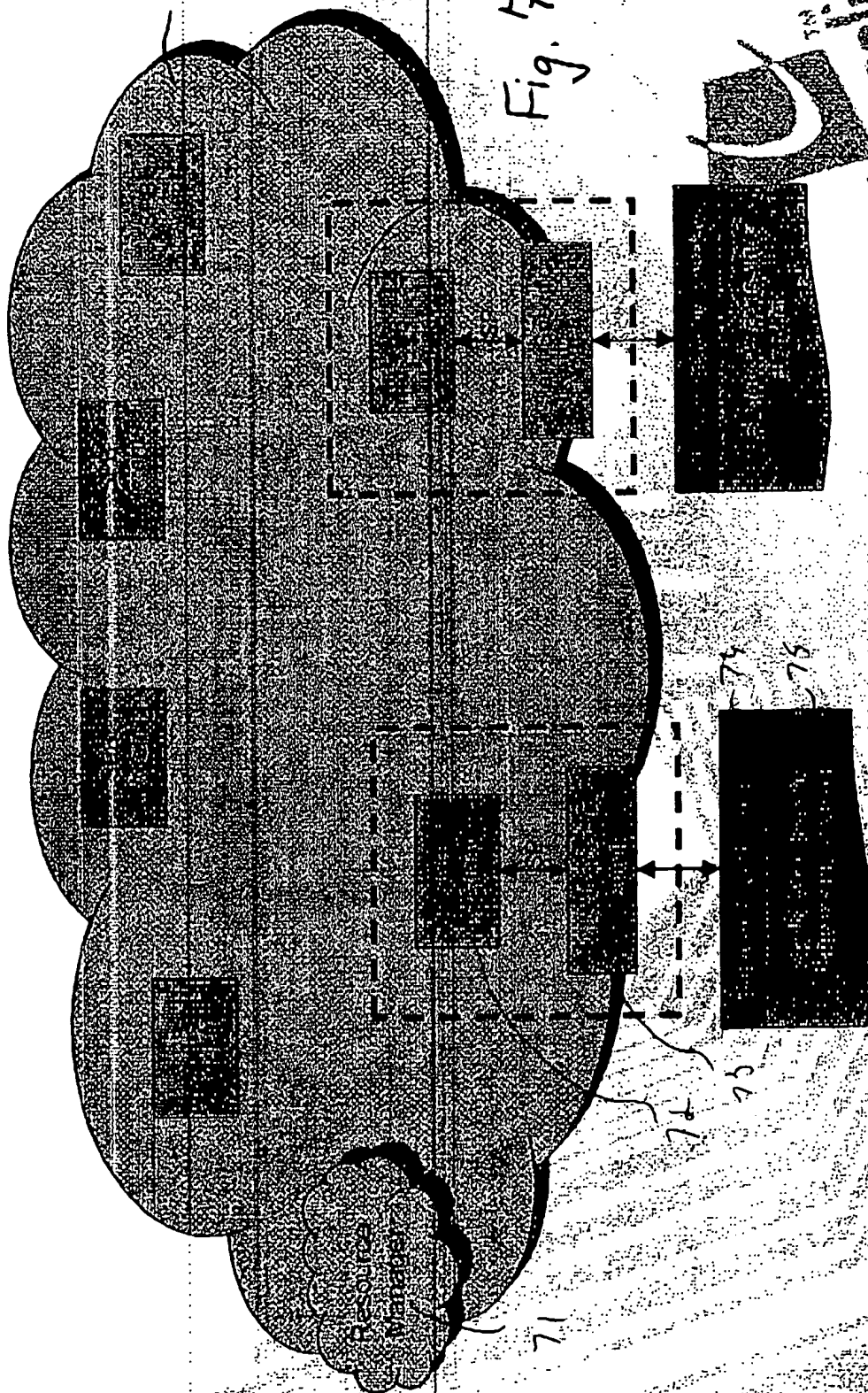
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Super Packet Buffer

- Responsible for moving Super Packet between the generic processing elements

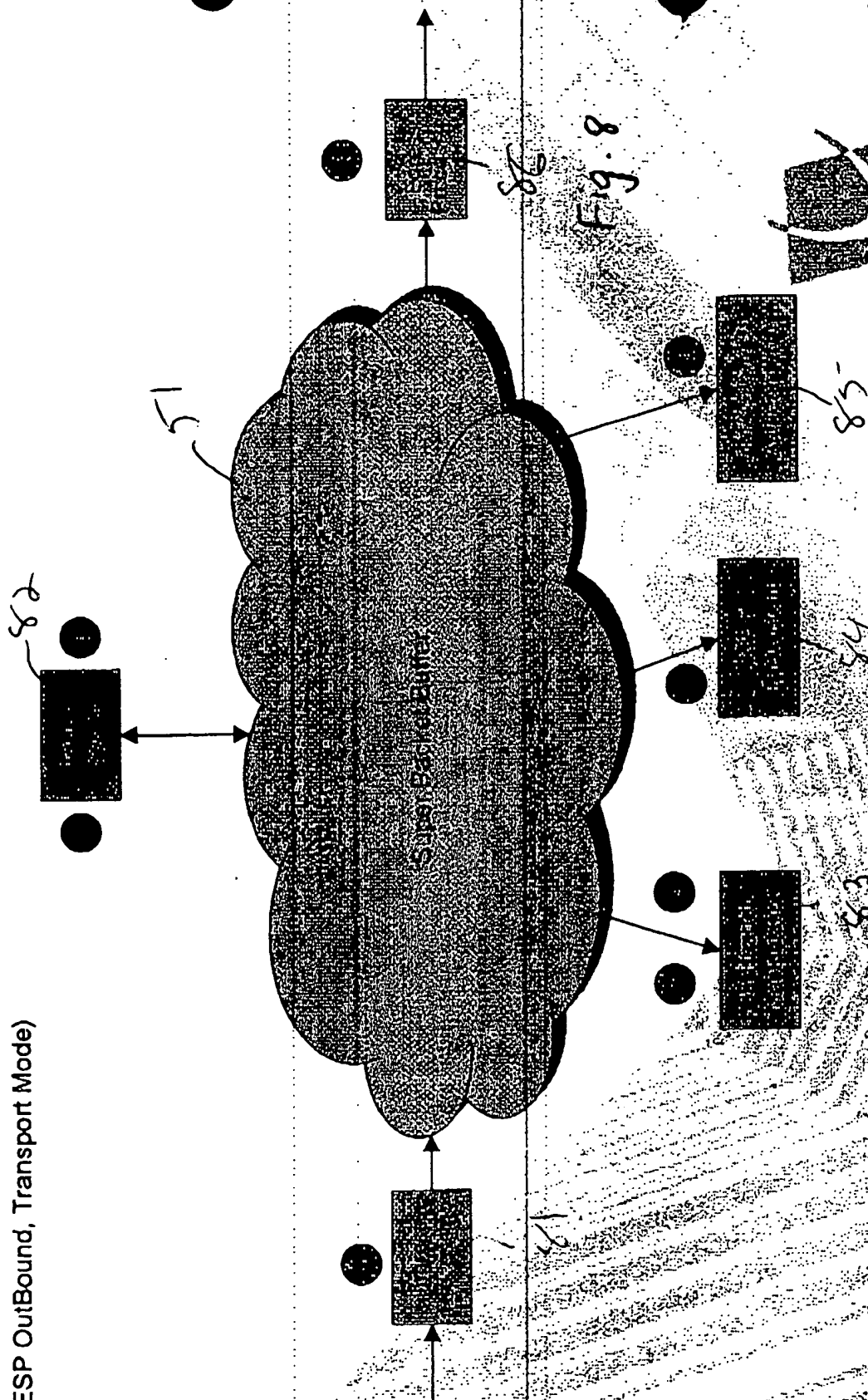


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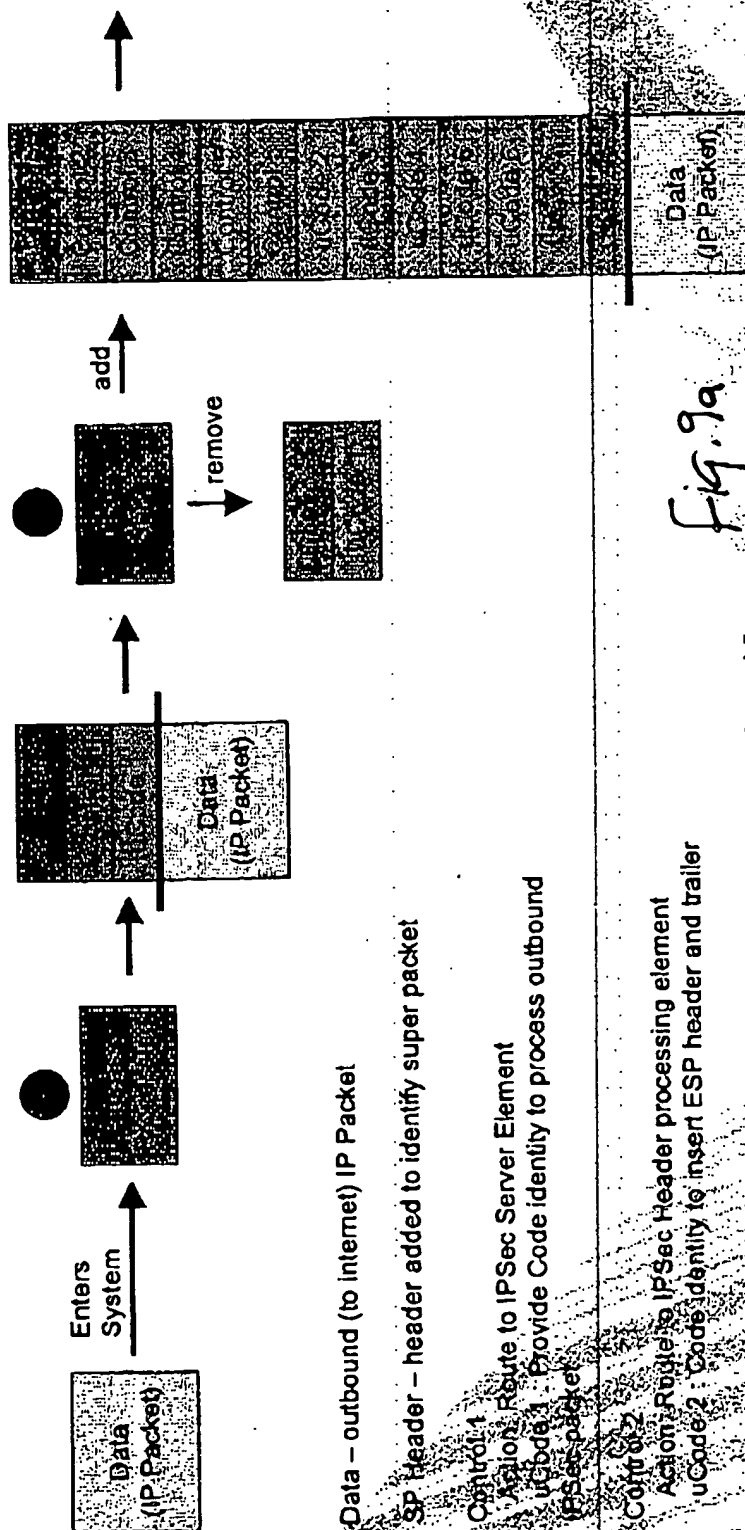
IPSec Processing Example

(ESP OutBound, Transport Mode)



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IPSec Super Packet (1)



Data - outbound (to Internet) IP Packet

SP Header - header added to identify super packet

Control 1

Action: Route to IPSec Server Element

uCode 1: Provide Code identity to process outbound

IPSec packet

Control 2

Action: Route to IPSec Header processing element

uCode 2: Code identity to insert ESP header and trailer

Control 3

Action: Route to 3DES processing element and encrypt

uCode 3: 3DES algorithm (CBC Mode)

Key 3: 3DES key for packet

Control 4

Action: Route to HMAC96-MD5 processing element and generate MAC

uCode 4: HMAC96-MD5 algorithm

Key 4: HMAC Key for packet

Control 5

Action: Place MAC in ESP Header

uCode 5: Code identity for post encryption header

manipulation

Control 6

Action: Route to Egress Unit

uCode 6: Code identity to strip new IP Packet from

Packet and transmit

Fig. 9a

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EXPERIMENTING NEXT GENERATION NETWORK SECURITY

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IPSec Super Packet (2)

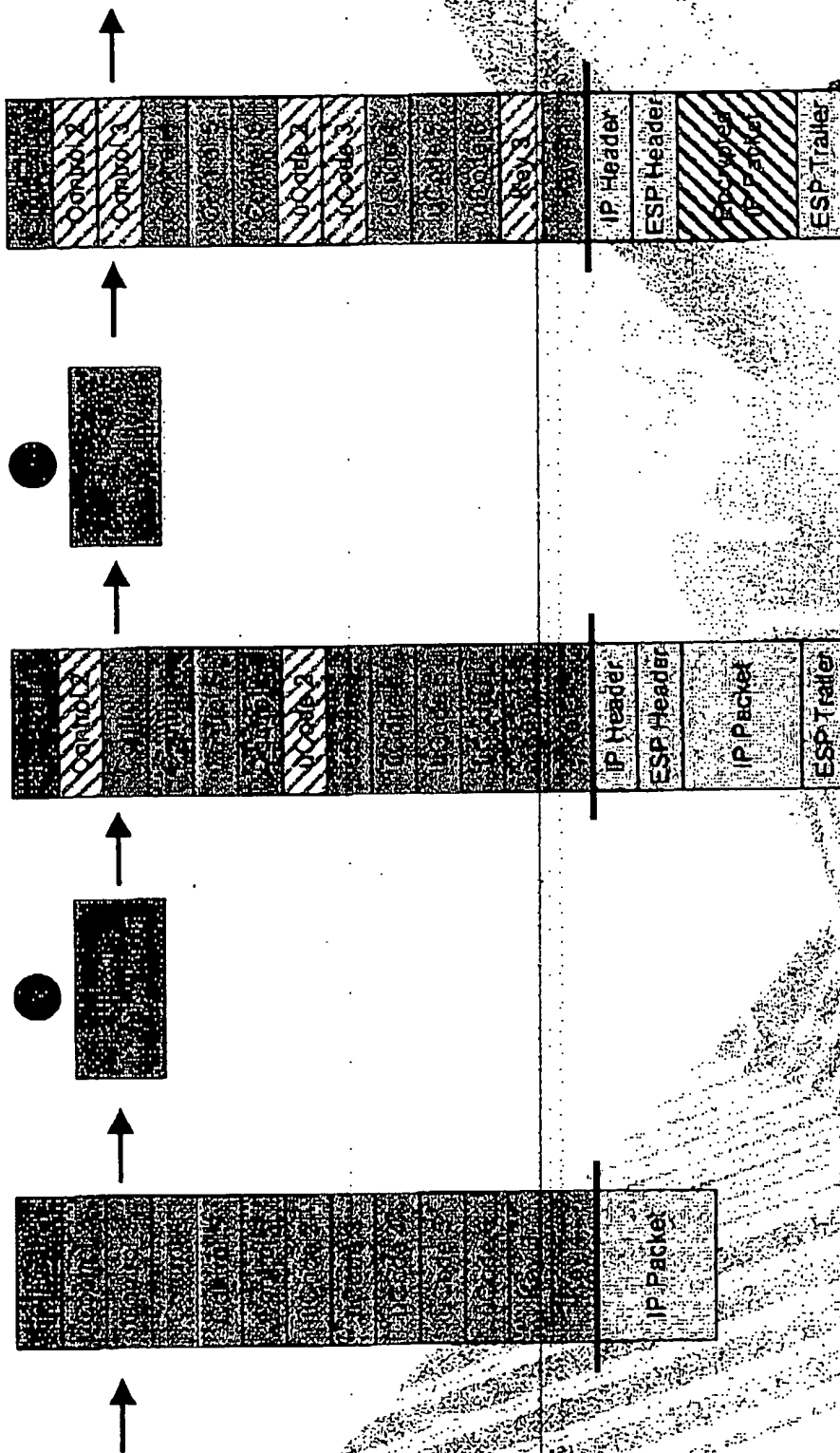


Fig. 9b

Cross hatch indicates processing complete

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IPSec Super Packet (3)

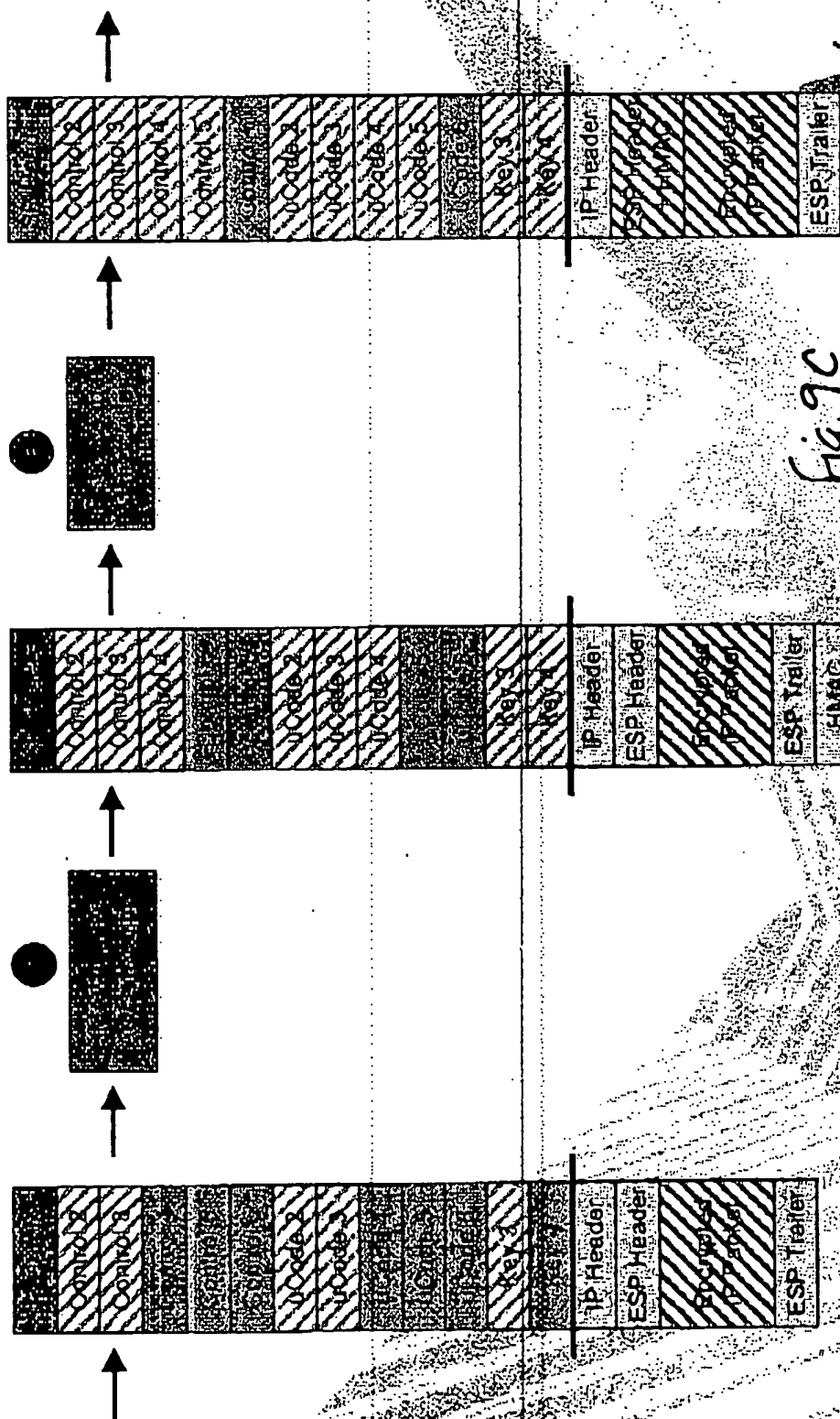


Fig. 9C

Cross hatch indicates processing complete

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IPSec Super Packet (4)

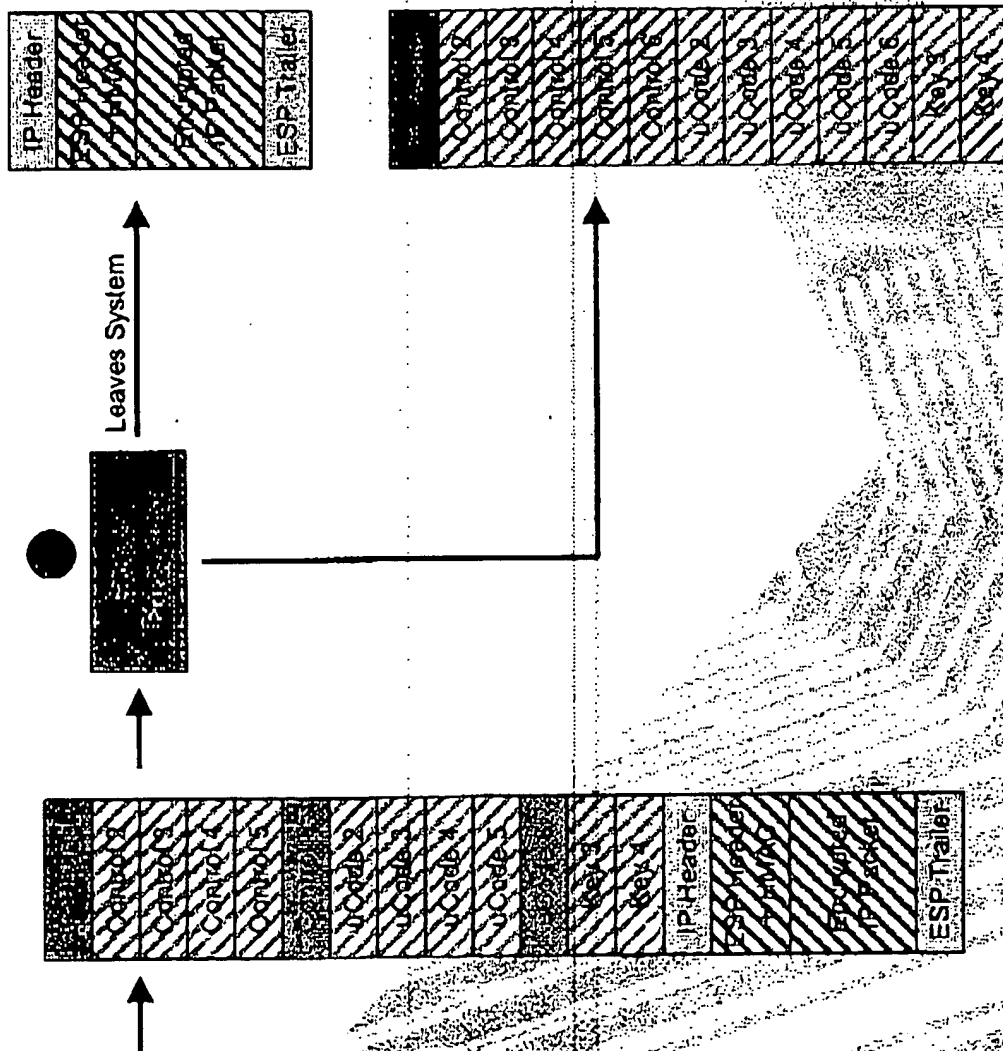


Fig. 9d



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Cross hatch indicates processing complete

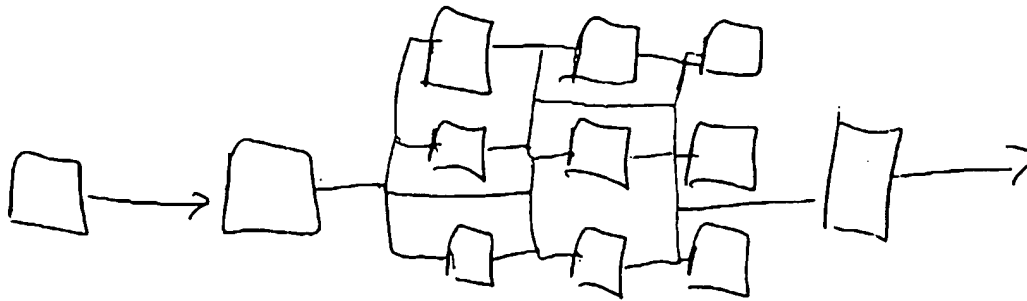


Fig-10